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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,085	09/09/2003	Rene Perrot	CS-21,376	9162

27182 7590 06/08/2005  
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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/657,085

Applicant(s)

PERROT ET AL.

Examiner

Rodney G. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt et al. (U.S. Pat. 6,599,405) in view of Hunt et al. (U.S. Pat. 5,674,367).

Regarding Applicant's claims 1, 9 and 14, Hunt et al. '405 teach a method of manufacturing a sputter target assembly (See Abstract) comprising the steps of manufacturing a backing plate (Column 1 lines 61-62), the backing plate having a cylindrical recess having a depth and a diameter and a yield strength less than the yield strength of a target insert. (Column 1 lines 61-66) The backing plate has a planar top surface. (See Fig. 1) A target insert is manufactured. (Column 1 lines 59) The target

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insert has a conical-shaped rear surface. (Column 2 lines 30-31) The target has a rear surface that corresponds with the cylindrical recess of the backing plate. (Column 1 lines 62-64) The target has a yield strength greater than that of the backing plate. (Column 3 lines 4-6) The recess of the backing plate has a depth that is less than the height of the target. (Column 1 lines 62-64) The target insert is hot pressed into the cylindrical recess so that the backing plate material reaches a state of plastic deformation that facilitates forming strong solid state bonds. It is advantageous to diffuse and react the materials together to form reaction products that contribute to the bond strength. (Column 3 lines 21-32)

Regarding Applicant's Claims 2 and 9, Hunt et al. '405 teach at least fifty percent of the frusta-conical rear surface bonds to the backing plate. (Column 3 lines 49-51)

Regarding Applicant's Claim 3, Hunt et al. '405 the target insert and backing plate are maintained at a temperature of above 200 degrees C for at least one hour to improve bonding. (Column 2 lines 60-62)

Regarding Applicant's Claim 4, Hunt et al. '405 pressing the target into near final shape includes utilizing powder. (Column 2 lines 56-59)

Regarding Applicant's Claim 5, Hunt et al. '405 the volume of the recess of the backing plate has a volume that is at least ninety percent of the volume of the tapered insert. (Column 3 lines 11-14)

Regarding Applicant's Claim 6, Hunt et al. '405 teach the backing plate recess can have a volume that is approximately equal to the tapered target insert's volume. (Column 3 lines 18-20)

Regarding Applicant's Claim 8, Hunt et al. '405 teach the cylindrical recess is disposed in a portion of the planar top surface of the backing plate. (See Fig. 1)

Regarding Applicant's Claims 10 and 15, Hunt et al. '405 teach the recess having a shape conformed to the shape of the target insert. (Column 6 lines 36-38)

Regarding Applicant's Claims 11 and 16, Hunt et al. '405 teach the reaction product between the target insert and the backing plate bonds the target insert to the backing plate. (Column 3 lines 30-32)

Regarding Applicant's Claims 12 and 17, Hunt et al. '405 teach a frustum and a conical interface bonds the target insert to the backing plate. (Column 6 lines 42-44)

Regarding Applicant's Claim 14, Hunt et al. '405 teach the conical interface consists of at least about sixty percent of the total bond surface area of the target insert. (Column 3 lines 51-53)

The differences between Hunt et al. '405 and the present claims is that the target insert protruding above the planar front surface of the backing plate is not discussed (Claim 1, 9, 18) and the front surface of the target has a frusta-conical configuration is not discussed (Claims 7, 13, 14).

Hunt et al. '367 teach a circular target. (Column 3 lines 4-6) The target front surface can be frusta-conical. (Figure 7) The target front surface extends above the target backing plate. (Figure 7)

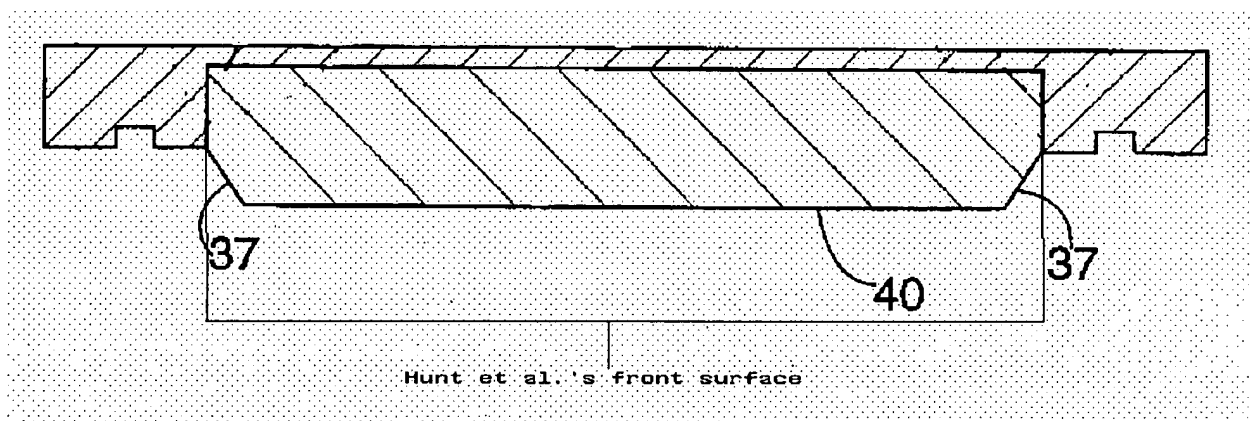
The motivation for utilizing a target that is frusta-conical and extends above the surface of the backing plate is that it allows for utilizing thicker targets. (Column 2 lines 6-8)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Hunt et al. '405 by utilizing a target insert that protrudes above the planar front surface of the backing plate and a front surface that has a frusta-conical configuration as taught by Hunt et al. '367 because it allows for utilizing thicker targets.

### ***Response to Arguments***

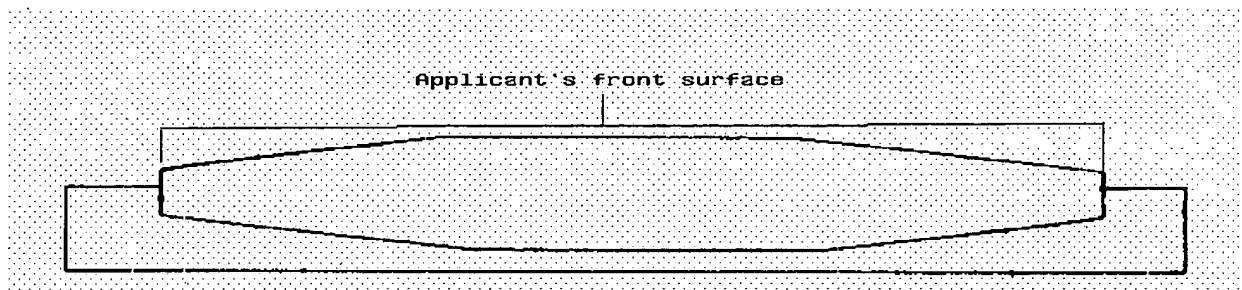
Applicant's arguments filed 3-21-05 have been fully considered but they are not persuasive.

In response to the argument that Hunt et al. '367 does not teach a frusta-conical configuration of the front surface so as to extend the target life but instead Hunt et al. '367 teach tapering a target sidewall, it is argued that Hunt '367 does teach a frusta-conical front surface of the target. The machining of the sidewall 37 produces a front surface of the target that is frusta-conical. (i.e. the frusta-conical front surface is made up of element 40 and element 37. )



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This is similar to Applicant's target.



Both Applicant's and Hunt et al.'s front surfaces are frusta-conical, protrude above the front surface of the backing plate and have a height greater than the depth of the recess of the backing plate (i.e. the target is thicker than the backing plate recess). Since Hunt et al. '367 teach utilizing thicker targets the life of the target would inherently be extended due to the extra material provided for sputtering.

The obviousness type double patenting rejection has been overcome because of the terminal disclaimer provided by Applicant.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

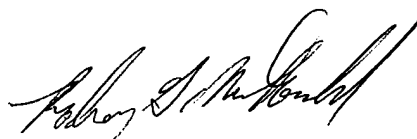
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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rodney G. McDonald  
Primary Examiner  
Art Unit 1753

RM  
May 31, 2005